

Board Administration and Regulatory Coordination Unit

Division 3. Air Resources Board

Chapter 9. Off-Road Vehicles and Engines Pollution Control Devices

Article 1. Small Off-Road Engines

§ 2403. Exhaust Emission Standards and Test Procedures--Small Off-Road Engines.

(a) This section applies to small off-road engines produced on or after January 1, 1995.

(b) Exhaust emissions from small off-road engines manufactured for sale, sold, or offered for sale in California, or that are introduced, delivered or imported into California for introduction into commerce, must not exceed:

Exhaust Emission Standards
grams per brake horsepower-hour
[grams per kilowatt-hour]

<i>Calendar Year</i>	<i>Engine Class⁽¹⁾</i>	<i>Hydro- carbon plus Oxides of Nitrogen⁽²⁾</i>	<i>Hydro- carbon⁽²⁾</i>	<i>Carbon Monoxide</i>	<i>Oxides Nitrogen</i>	<i>Particulate</i>
1995	I	12.0	-	300	-	0.9 ⁽³⁾
	II	10.0	-	300	-	0.9 ⁽³⁾
	III ⁽⁴⁾	-	220	600	4.0	-
	IV ⁽⁴⁾	-	180	600	4.0	-
	V ⁽⁴⁾	-	120	300	4.0	-
1996 to 1999	I	12.0 ⁽⁵⁾	-	350	-	0.9 ⁽³⁾
	II	10.0 ⁽⁵⁾	-	350	-	0.9 ⁽³⁾
	III ⁽⁴⁾	-	220 ⁽⁵⁾	600	4.0 ⁽⁵⁾	-
	IV ⁽⁴⁾	-	180 ⁽⁵⁾	600	4.0 ⁽⁵⁾	-
	V ⁽⁴⁾	-	120 ⁽⁵⁾	300	4.0 ⁽⁵⁾	-
<i>Model Year</i>	<i>Engine Class⁽¹⁾</i>	<i>Durability Periods (hours)</i>	<i>Hydrocarbon plus Oxides of Nitrogen⁽²⁾</i>	<i>Carbon Monoxide</i>	<i>Particulate</i>	
2000-2001 ⁽⁵⁾	SI 0-65 cc, inclusive	50/125/300	54 [72]	400 [536]	1.5 ⁽⁴⁾ [2.0]	
	SI >65 cc - <225 cc	N/A	12.0 [16.1]	350 [467]		
	SI \$225 cc	N/A	10.0 [13.4]	350 [467]		
2002-2005 ⁽⁵⁾	Spark-Ignition (SI) Engines 0-65 cc, inclusive	50/125/300	54 [72]	400 [536]	1.5 ⁽⁴⁾ [2.0]	
	SI >65 cc - <225 cc Horizontal	125/250/500	12.0 [16.1]	410 [549]		
	SI >65 cc - <225 cc Vertical	NA	12.0 [16.1]	350 [467]		
	SI \$225 cc	125/250/500	9.0 [12.0]	410 [549]		
2006 and subsequent ⁽⁵⁾	SI 0-65 cc, inclusive	50/125/300	54 [72]	400 [536]	1.5 ⁽⁴⁾ [2.0]	
	SI >65 cc - <225 cc	125/250/500	12.0 [16.1]	410 [549]		

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SI	125/250/500	9.0	410
\$225 cc		[12.0]	[549]

(1) "Class I" means small off-road engines greater than 65 cc to less than 225 cc in displacement.

"Class II" means small off-road engines greater than or equal to 225 cc in displacement.

"Class III" means small off-road engines less than 20 cc in displacement.

"Class IV" means small off-road engines 20 cc to less than 50 cc in displacement.

"Class V" means small off-road engines greater than or equal to 50 cc to 65 cc in displacement.

(2) The Executive Officer may allow gaseous-fueled (i.e., propane, natural gas) engine families, that satisfy the requirements of the regulations, to certify to either the hydrocarbon plus oxides of nitrogen or hydrocarbon emission standard, as applicable, on the basis of the non-methane hydrocarbon (NMHC) portion of the total hydrocarbon emissions.

(3) Applicable to all diesel-cycle engines.

(4) Applicable to all two-stroke engines.

(5) Engines used exclusively in snowthrowers and ice augers need not certify to or comply with the HC and NO_x standards or the crankcase requirements at the option of the manufacturer.

(c)(1) Manufacturers of small spark-ignited off-road engines between 65 and 225 cc displacement that are manufactured for sale, offered for sale, or sold in any extreme non-attainment area, or introduced, delivered or imported into any such extreme non-attainment area for sale to an ultimate purchaser in an extreme non-attainment area, and that are produced by manufacturers who produce more than 40,000 engines per year between 65 and 225 cc for sale in such areas (based on data for engines produced for sale in such areas in model year 1998), must meet the additional requirements of this subsection and achieve the additional emission reductions in subparagraph (3).

(2) No later than May 1, 1999, each manufacturer subject to this subsection shall submit a plan to achieve additional emission reductions. The plan shall include the following:

(A) An identification of the specific measures from subparagraph (4) that the manufacturer intends to implement in the extreme nonattainment areas, including but not limited to identification of engine families that in model years 2000 and 2001 will meet the exhaust emissions reduction requirements of subsection (b) for 2002 and subsequent model years prior to required implementation, and the projected sales volumes of such engine families in the extreme nonattainment areas;

(B) Data documenting the emissions performance of engines included in the plan when operated on fuels meeting the requirements of Chapter 5, Article 1, subarticle 2 of this Title applicable in the extreme nonattainment areas; and

(C) A description of the provisions made by the manufacturer to assure that all engines offered for sale or sold in the extreme nonattainment areas (or introduced, delivered or imported into the extreme nonattainment areas for sale to an ultimate purchaser in that area) will meet the requirements of the plan, including but not limited to a description of the methods to be used to determine actual sales of engines in the extreme nonattainment areas; provided, that in the case of manufacturers that maintain data on actual or projected Statewide engine sales, the Executive Officer may approve provisions that demonstrate compliance with the plan on a Statewide basis.

(3) The plans submitted under this subsection shall in the aggregate provide for emissions reductions and controls by or from the group of engines produced by the submitting manufacturers that are equal to or greater than the difference between: 1) reductions that would have been achieved in the extreme nonattainment areas in calendar years 2000, 2001, 2005 and 2010 by all manufacturers of engines greater than 65 cc displacement that would have met the emissions reduction requirements proposed in the staff report contained in Mail-Out MSC-98-02 released February 6, 1998; and 2) those same engines meeting the requirements of subsection (b). The Executive Officer shall determine whether a plan meets this requirement based on the estimated model year 1998 sales in the extreme nonattainment areas available at time of plan submission by manufacturers covered by this subsection, and using a proportional allocation between such manufacturers based upon such estimated sales.

(4) The manufacturer's plan shall achieve additional emission reductions or controls through one or more of the following measures:

(A) The certification and introduction of engines greater than 65 cc meeting the standards in subsection (b) before the applicable model year;

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(B) The voluntary certification of engines not subject to emission reductions requirements of the ARB due to preemption under section 222 of U.S. Public Law No. 101-549. A manufacturer choosing voluntarily to certify an engine shall also certify that it will honor all compliance and warranty requirements set forth in the provisions of this Title for that engine;

(C) The certification of engines to Family Emission Levels below the standards in subsection (b), or of engines that otherwise generate emissions credits under section 2408 of this Article and that are not used for any other purpose;

(D) The certification of engines to useful life periods longer than the maximum requirements set forth in subsection (b);

(E) The introduction of engines that achieve in-use reductions in engine evaporative emissions demonstrated by procedures acceptable to the Executive Officer;

(F) The use of emission credits generated by the manufacturer pursuant to section 2409 of this Article and that are not used for any other purpose; and

(G) Other measures approved in advance by the Executive Officer. (5) The plan shall also demonstrate that at least 60 percent of engines greater than 65 cc sold in extreme nonattainment areas comply in model years 2000 and 2001 with the standards in subsection (b) applicable to the 2006 model year. The percentage shall be calculated based on the total projected sales by all manufacturers of engines greater than 65 cc in the extreme nonattainment areas in those model years, and shall be proportionally allocated between the manufacturers subject to this subsection.

(6) The provisions of this subsection are not applicable to engines offered for sale or sold outside an extreme nonattainment area, or introduced, delivered or imported into an extreme nonattainment area for sale to an ultimate purchaser outside an extreme nonattainment area.

(7) The Executive Officer shall determine if a plan timely submitted under this subsection meets the requirements of this subsection no later than June 1, 1999. The Executive Officer shall not issue any executive orders for individual engine families subject to the plan until the plan is approved. The manufacturer shall submit annual reports to the Executive Officer demonstrating compliance with the plan approved by the Executive Office and may, at its discretion, propose revisions to its plan on an annual basis. If, on the basis of information contained in a manufacturer's annual report or any other information, the Executive Officer finds that the manufacturer is not in compliance with an approved plan, the Executive Officer may direct the manufacturer to submit a revised plan; provided, that no such revision shall be required solely as a result of gain or loss in market share in the extreme nonattainment areas during the period while this subsection remains in effect. The Executive Officer shall act upon any proposed revision of a plan within 30 days of receipt. Pending approval of a revised plan, the Executive Officer shall not issue any Executive Orders for individual engine families subject to the revised plan. These actions of the Executive Officer are in addition to any remedies available under this Article or Part 5 of Division 26 of the Health & Safety Code.

(d) The test procedures for determining compliance with the standards for exhaust emissions from new small off-road engines are set forth in "California Exhaust Emission Standards and Test Procedures for 1995 and Later Small Off-Road Engines," adopted March 20, 1992, and last amended January 28, 2000, which is incorporated herein by reference.

(e) Averaging. For new 2000 and subsequent model year small off-road engines, a manufacturer may comply with the standards established in paragraph (b), above, by choosing either to certify an engine family to the standards or to use the corporate average described below.

(1) For each model year, the corporate average value for a pollutant is defined by the following equation:

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$$\frac{\sum_{j=1}^n (\text{FEL}_j) (\text{Sales}_j) (\text{HP}_j) (\text{Load Factor}) (\text{EDP}_j) - \text{credits expended}}{\sum_{j=1}^n (\text{Sales}_j) (\text{HP}_j) (\text{Load Factor}) (\text{EDP}_j)} = \text{AVG}$$

where n = the number of small off-road engine families.

FEL = the Family emission level for an engine family.

Sales_j = eligible sales of engine family j.

HP_j = sales-weighted maximum modal horsepower of engine family j, or an alternative approved by the Executive Officer.

EDP_j = Emissions durability period of engine family j.

AVG = For a given pollutant (HC+NO_x, CO, or Particulate Matter), a manufacturer's corporate average of the exhaust emissions from those California small off-road engines subject to the California corporate average pollutant exhaust emission standard, as established by an Executive Order certifying the California production for the model year.

Credits expended = HC+NO_x or Particulate Matter credits, as defined in Sections 2408 and 2409, that are expended by the manufacturer to adjust the corporate average. This term has no meaning for any pollutants other than HC+NO_x and Particulate Matter.

(2) The manufacturer's average pollutant exhaust emissions must meet the corporate average standard at the end of the manufacturer's production for the model year. At the end of the model year, the manufacturer must calculate a corrected corporate average using actual rather than projected sales. Any discrepancy must be made up with emission reduction credits as explained in paragraph (3). (3) All excess HC+NO_x or Particulate Matter emissions resulting from final non-compliance with the California standard must be made up with emission reduction credits or through incorporation in the following model year's corporate average.

(A) Emission reduction credits expended within the next model year to remedy final non-compliance will be used at a rate of 1 gram to 1 gram.

(B) Emission reduction credits expended after the end of the next model year to remedy final non-compliance must be used at a rate of 1.5 grams to 1 gram.

(f) In 1995 and subsequent years, fire and police departments, and other entities that specialize in emergency response may purchase emergency equipment powered by a non-California certified engine only when such equipment with a California-certified engine is not available. For purposes of this section, a request to purchase emergency equipment powered by a non-California certified engine must be submitted for approval to the Executive Officer.

(g)(1) No new engines below 225 cc may be produced for sale to replace pre-1995 model equipment after January 1, 1999, unless such new engines comply with the 1995 model emission standards.

(2)(A) A new small off-road engine equal to or greater than 225 cc, intended solely to replace an engine in a piece of off-road equipment that was originally produced with an engine manufactured prior to the applicable implementation date as described in paragraph (b), shall not be subject to the emissions requirements of paragraph (b) provided that:

(i) The engine manufacturer has ascertained that no engine produced by itself or the manufacturer of the engine that is being replaced, if different, and certified to the requirements of this article, is available with the appropriate physical or performance characteristics to repower the equipment; and

(ii) Unless an alternative control mechanism is approved in advance by the Executive Officer, the engine manufacturer or its agent takes ownership and possession of the engine being replaced; and

(iii) The replacement engine is clearly labeled with the following language, or similar alternate language approved in advance by the Executive Officer:

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THIS ENGINE DOES NOT COMPLY WITH CALIFORNIA OFF-ROAD OR ON-HIGHWAY EMISSION REQUIREMENTS. SALE OR INSTALLATION OF THIS ENGINE FOR ANY PURPOSE OTHER THAN AS A REPLACEMENT ENGINE IN AN OFF-ROAD VEHICLE OR PIECE OF OFF-ROAD EQUIPMENT WHOSE ORIGINAL ENGINE WAS NOT CERTIFIED IS A VIOLATION OF CALIFORNIA LAW SUBJECT TO CIVIL PENALTY.

(B) At the beginning of each model year, the manufacturer of replacement engines must provide, by engine model, an estimate of the number of replacement engines it expects to produce for California for that model year.

(C) At the conclusion of the model year, the manufacturer must provide, by engine model, the actual number of replacement engines produced for California during the model year, and a description of the physical or performance characteristics of those models that indicate that certified replacement engine(s) were not available as per paragraph (A).

(h) Any new equipment engine certified to comply with California emission standards and test procedures for on-road or other off-road applications may, upon approval by the Executive Officer, be in compliance with these regulations.

NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43102 and 43104, Health and Safety Code. Reference: Sections 43013, 43017, 43018, 43101, 43102, 43104, 43150-43154, 43205.5 and 43210-43212, Health and Safety Code.

REFERENCE